

PROJECT ADMINISTRATION DATA SHEET

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ORIGINAL

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REVISION NO. _____

Project No. A-2934DATE: 4/25/81Project Director: E. L. Lewis~~School~~/Lab EDL/IEDSponsor: Delta Enterprises, Inc., Greenville, MSType Agreement: Letter of Agreement dated 4/7/81Award Period: From 4/20/81 To 6/20/81 (Performance) 6/20/81 (Reports)Sponsor Amount: \$3,767

Contracted through:

Cost Sharing: N/A

GTRI/833

Title: Analysis of Production and Material Flow at Century Well-Built, Little Rock, Arkansas.

ADMINISTRATIVE DATA

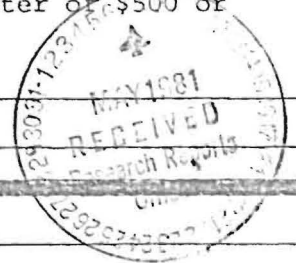
OCA CONTACT Faith G. CostelloSponsor Technical Contact: See BelowSponsor Admin./Contractual Contact: Mr. Carl E. Banyard, Director of Corporate Strategy and Implementation; Delta Enterprises, Inc.; P. O. Box 588; Greenville, MS 38701Reports: See Deliverable Schedule Security Classification: N/ADefense Priority Rating: N/A

RESTRICTIONS

See Attached N/A Supplemental Information Sheet for Additional Requirements.Travel: Foreign travel must have prior approval - Contact OCA in each case. Domestic travel requires sponsor approval where total will exceed greater of \$500 or 125% of approved proposal budget category.Equipment: Title vests with Sponsor; however none proposed.

COMMENTS:

COPIES TO:

Administrative Coordinator
Research Property Management
Accounting Office
Procurement OfficeResearch Security Services
Reports Coordinator (OCA)
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Library, Technical ReportsEES Research Public Relations (
Project File (OCA)
Other: _____

SPONSORED PROJECT TERMINATION SHEETDate 3/4/82

Project Title: Analysis of Production and Material Flow at Century Well-Built
Little Rock, AR
Project No: A-2934
Project Director: E. L. Lewis
Sponsor: Delta Enterprises, Inc.

Effective Termination Date: 6/30/81Clearance of Accounting Charges: 6/30/81

Grant/Contract Closeout Actions Remaining:

- ☒ Final Invoice ~~and Closing Documents~~
- ☐ Final Fiscal Report
- ☐ Final Report of Inventions
- ☐ Govt. Property Inventory & Related Certificate
- ☐ Classified Material Certificate
- ☐ Other _____

Assigned to: EDL/IED (~~School~~/Laboratory)COPIES TO:

Administrative Coordinator
Research Property Management
Accounting
Procurement/EES Supply Services

Research Security Services
Reports Coordinator (OCA)
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Library

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Computer Input
Project File
Other _____



Georgia Institute of Technology

ENGINEERING EXPERIMENT STATION

ENGINEERING EXTENSION LABORATORY

Southwest Georgia Area Office
2402 Dawson Road
Suite 4
Albany, Georgia 31707
Area Code 912/439-4188

May 8, 1981

Mr. Carl Banyard, Director
Corporate Strategy and Implementation
Delta Enterprises, Inc.
P. O. Box 588
Greenville, Mississippi 38701

Dear Mr. Banyard:

This letter is to serve as a report of my analysis of the status of Century Wel-Bilt as observed during my visit to the facility on April 28, and 29, 1981.

First of all, I was extremely impressed with the apparent dedication and level of competency of the management team. In reviewing the progress which has been made with production and production control during the past year, it is obvious that many positive procedural and operational changes have taken place. The management team appears to be coordinating activities well and has an overall goal of improving the total productivity of the plant.

There were a few items of interest which I feel warrant additional consideration by myself, plant personnel, or possibly other staff members at your disposal. The following is a listing and description of the major production and systems problems existing within the plant. The order of presentation has no particular significance other than separation of the discipline of the problems.

1. The cost and profitability analysis by product line needs to be closely reviewed. The following questions should be resolved:
 - A. Who determines the selling price? Is Century Wel-Bilt expected to operate at a profit even though they have little input into establishing the sales price?
 - B. What gross profit margin do you expect from various product lines throughout the corporation? Century Wel-Bilt's margin is extremely lean, with the lowest gross profit items representing the greatest portion of sales volume.
 - C. Are your sales commissions in line with the remainder of the industry? These commissions vary from 14 to 44 percent of the gross profit of the individual product lines, with the average being 27%.
 - D. The direct labor and corresponding manufacturing overhead charges are identical for all styles signified by "B". Since there are three (3) product lengths and respective number of treads included in the model series "B", these cost estimates greatly concern me. I strongly suspect that there exists a greater difference in the actual production costs of these models.

- E. There also appears to be some discrepancies in the costs of plywood and hardware for many of the models.
2. The actual costs of production for the pocket door frames and aluminum stairs needs to be accurately determined. A little effort in tracking the exact direct labor hours expended on these items would be most valuable and would allow Century Wel-Bilt to easily determine the profitability of these product lines.
 3. The material flow and corresponding production flow are confusing and offer great possibilities of improvement. Attachment I is a production flow analysis of model BET 89. It is immediately obvious that there exists a need for a more direct routing of materials. However, prior to attempting to determine the optimum plant layout, several decisions must be made by Delta corporate personnel or personnel at Century Wel-Bilt. These questions are:
 - A. Determine feasibility of reworking existing dado machine or purchasing new dado machine.
 - B. Examine need for the various drilling operations and determine if combination of automatic machines could eliminate the need for additional operations and resultant excessive handling.
 - C. Remove all unnecessary equipment.
 - D. Determine profitability of pocket door frames and arm radius machine. If pocket door frame operation is unprofitable, run the remainder of raw material and work-in-process inventory and close the operation. The reasoning behind locating the arm radius machine at Century Wel-Bilt rather than Mid-South Stampings should be investigated. Once the fact of optimum location is determined, the machine should be relocated to allow improved flow.
 4. I was not able to review the direct labor time studies for the various operations. However, while discussing production efficiency with plant personnel, it became obvious that the production rates in operation are not exact indicators of actual productivity. The inconsistencies occur because the standards assume a continuous flow of material through the various operations. This condition actually never occurs since all operations prior to the three sub-assembly stations are producing for inventory storage.

The production standards should be adjusted to rate the productivity of only those workers directly involved in the final assembly of the product. This includes the 3 sub-assembly stations and the final assembly line. The implementation of such rates would allow you to compare the actual output per man-hour of each assembly line. If additional or fewer personnel are on the final assembly line, then units produced would be expected to increase or decrease accordingly.

For comparison, the data you are currently compiling simply tells you the number of stairs produced for the entire plant, without identifying the man-hours involved in building work-in-process inventory.

5. With the implementation of standard notes for final assembly, the job of determining the actual number of personnel required per a given production schedule would be greatly simplified. This would allow you to cross-train individuals normally involved in some phase of the milling operations to transfer into final assembly when needed due to production demands or absenteeism. Again, this should be considered only if you have established accurate production rates (Standard Direct Labor Hours/Unit Produced) for the assembly operations.
6. With increased production demands on the assembly operations, it will become necessary to improve your quality control inspections. This could probably be accomplished most efficiently by initiating an accountability system in conjunction with quality checks. The individual responsible for packing should pull final quality inspections and identify himself, the production line, and date of production. The increased sense of accountability has proved to effectively improve overall quality levels. After a brief period with increased production and accountability, it will become necessary to implement very thorough quality checks. This quality control program will inspect and document quality levels of incoming raw materials and at all operational stages throughout the plant.

If Century Wel-Bilt is to establish a name as the "quality" folding stair, it is critical that quality be closely monitored.

7. A thought also occurred during my conversations with Don and Chatter, to introduce add-ons to your product which would greatly enhance its market appeal, at least to a segment of the market. The idea is to offer an electro-mechanical latch, controlled by a standard electrical switch. The switch, located inside the house, would provide the option of locking stairs located in carports and storage rooms.
8. The organizational chart for Century Wel-Bilt indicates a plant superintendent and foreman for the various operational areas, even though most of these foremen slots were open. I failed to see any breakdown of direct labor hours per unit for any of the cost centers. Century Wel-Bilt should strongly consider establishing daywork standards for the easily definable cost centers, i.e., mill department, medium stairs, aluminum stairs, and bi-fold stairs. The implementation of daywork standards will provide management a useful tool to evaluate each cost center and its respective foreman.

These comments are submitted for your analysis, internal distribution and response. I will be glad to assist you and the staff at Century Wel-Bilt on further analysis or implementation of any of the items mentioned above.

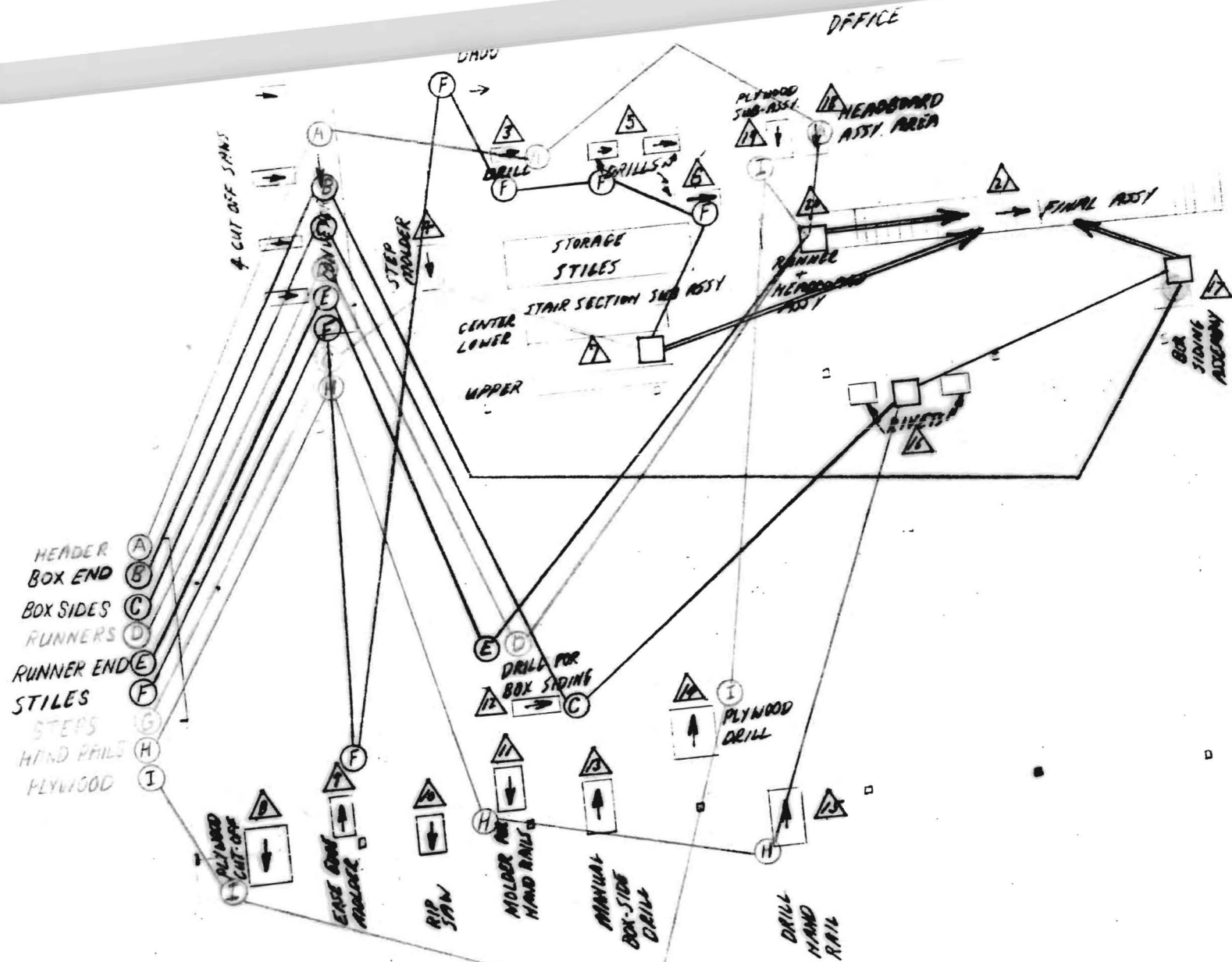
I look forward to hearing from you concerning your thoughts on the program of work at Century Wel-Bilt or other plants within Delta Enterprises, Inc. If you have any questions concerning this matter, do not hesitate to call.

Sincerely,

Edwin L. Lewis,
Director

ELL/dfa

Enc:



FINAL REPORT ON CONTRACT A-2934-000
ANALYSIS OF PRODUCTION AND MATERIAL FLOW
AT CENTURY WELL-BUILT, LITTLE ROCK, ARKANSAS

During April 28th and 29th, 1981 a survey of the Century Well-Built facility and records was conducted in order to determine the company status. As a result of this survey, many areas were identified which need to be addressed to improve the company's production capabilities.

A summary of the major production and systems problems existing within the plant which was provided to the Director of Corporate Strategy and Implementation of Delta Enterprises follows:

1. The cost and profitability analysis by product line needs to be closely reviewed. The following questions should be resolved:
 - A. Who determines the selling price? Is Century Well-Built expected to operate at a profit even though they have little input into establishing the sales price?
 - B. What gross profit margin do you expect from various product lines throughout the corporation? Century Well-Built's margin is extremely lean, with the lowest gross profit items representing the greatest portion of sales volume.
 - C. Are your sales commissions in line with the remainder of the industry? These commissions vary from 14 to 44 percent of the gross profit of the individual product lines, with the average being 27%.
 - D. The direct labor and corresponding manufacturing overhead charges are identical for all styles signified by "B". Since there are three (3) product lengths and respective number of treads included in the model series "B", there probably exists a significant difference in the actual production costs of these models and charges should reflect this.
 - E. There also appears to be some discrepancies in the costs of plywood and hardware for many of the models.
2. The actual costs of production for the pocket door frames and aluminum stairs needs to be accurately determined.
3. The material flow and corresponding production flow are confusing and offer great possibilities of improvement. However, prior to attempting to determine the optimum plant layout, several decisions must be made by Delta corporate personnel or personnel at Century Well-Built. These questions are:
 - A. Determine feasibility of reworking existing dado machine or purchasing new dado machine.
 - B. Examine need for the various drilling operations and determine if combination of automatic machines could eliminate the need for additional operations and resultant excessive handling.

- C. Remove all unnecessary equipment.
 - D. Determine profitability of pocket door frames and arm radius machine. If pocket door frame operation is unprofitable, run the remainder of raw material and work-in-process inventory and close the operation. The reasoning behind locating the arm radius machine at Century Well-Built rather than Mid-South Stampings should be investigated. Once the fact of optimum location is determined, the machine should be relocated to allow improved flow.
4. The production rates in operation are not exact indicators of actual productivity. The production standards should be adjusted to rate the productivity of only those workers directly involved in the final assembly of the product.
- For comparison, the data you are currently compiling simply tells you the number of stairs produced for the entire plant, without identifying the man-hours involved in building work-in-process inventory.
- 5. With the implementation of standard notes for final assembly, the job of determining the actual number of personnel required per a given production schedule would be greatly simplified. This would allow cross-training of individuals normally involved in some phase of the milling operations to transfer into final assembly when needed due to production demands or absenteeism.
 - 6. With increased production demands on the assembly operations, it will become necessary to improve quality control inspections. This could be accomplished most efficiently by initiating an accountability system in conjunction with quality checks.
 - 7. Introduce add-ons to the product to greatly enhance its market appeal. For example, an electro-mechanical latch, controlled by a standard electrical switch. The switch, located inside the house, would provide the option of locking stairs located in carports and storage rooms.
 - 8. Century Well-Built should strongly consider establishing daywork standards for the easily definable cost centers, i.e. mill department, medium stairs, aluminum stairs, and bi-fold stairs. The implementation of daywork standards will provide management of a useful tool to evaluate each cost center and its respective foreman.

These comments were provided in a letter to Delta Enterprises dated May 8, 1981.
(See Attached)